

## **FC 107 : BASIC ELECTRONICS & ELECTRICAL ENGINEERING**

**Credits : 5 (L = 4, P = 2)**

1. Basic electrical networks : Passive network elements. Solution of resistive networks. Kirchoff's laws. Loop and node methods.
2. AC fundamentals : Definitions of cycle, frequency, time period, amplitude and phase angle. RMS and average values. Single-phase series RLC circuit under steady-state. Comparison of single-phase and three-phase system.
3. Basic concept of electromagnetism and electromagnetic induction; laws of electromagnetism.
4. Basic concept of generation, transmission and distribution of electrical power : Causes and consequences of faults; basic protective system.
5. Construction and basic principle of operation of DC machine, single-phase transformer, induction motor and alternator. Conversion of electrical energy into heat and light energy. Starters for AC & DC motors.
6. Scope and applications of electronics; basic operation of a diode and a transistor; basic requirements and characteristics of rectifier, amplifier and oscillator; overview of semiconductor technology and the fabrication process.
7. Block diagram of a communication system : Analog and digital signals. Sources and consequences of noise. Types of communication systems, viz. analog and digital communication, telephony, optical fiber, satellite communication, and cellular communication. Effect of communication technology in the modern world.
8. Fundamentals of electronic instrumentation — transducers and data acquisition. Basic operation of a control system.

## REFERENCE BOOKS :

1. Cotton H  
*Electrical Technology*  
CBS Publishers and Distributors
2. Mittle V N  
*Basic Electrical Engineering*  
Tata McGraw-Hill
3. Ryder J D  
*Electronics Fundamentals and Applications*  
Prentice Hall of India
4. Bhargava N N  
*Basic Electronics and Linear Circuits*  
Tata McGraw-Hill